

thesia, though its application has not been worked out in detail.

(d) *The Relation of Ether and of Nitrous Oxid to the Infections.*—We have already referred to the protective action of nitrous oxid in the presence of the stimuli of continued consciousness as in prolonged insomnia; and other histologic studies have shown that morphin also protects the brain, suprarenals and liver from the destructive action of prolonged or intense stimuli. It follows, then, that since the effects of an infection on the brain, suprarenals and liver are identical with the effects of insomnia, emotion, etc., then the administration of nitrous oxid and morphin will in part protect the organism against the damaging effect of infection.

Summary of Experimental Findings: Nitrous oxid and ether anesthesia alike cause an increase in the H-ion concentration of the blood, the spinal fluid and the bile; and progressively decrease the reserve alkalinity of the blood. Ether causes marked histologic changes in the brain, suprarenals and liver, these changes being identical in kind with the histologic lesions caused by acid injection, or activation of any kind. Nitrous oxid and morphin each measurably protect the brain against histologic changes due to infection, while ether increases the damaging effects of infection.

(e) *The Clinical Bearing of These Studies.*—The identity of the phenomena of anesthesia with the succession of clinical symptoms which accompanies an increasing acidosis, combined with the fact that the histologic changes produced by nitrous oxid and by ether are identical with those caused by acidosis, supports the postulate that anesthesia is an induced acidity. If the acidity is slight, anesthesia is light and the patient responds to even slight stimulation. As the acidity increases, the anesthesia deepens—first, associative memory is lost, but the cutting of the skin still causes involuntary movements; then muscular tone is lost, and even the strong contact stimuli of a surgical operation cannot drive their impulses through the brain to the muscles; and finally, the decreasing alkalinity may so nearly approach the neutral point that even the circulatory and respiratory centers, which are especially adapted to respond to the stimulus of increased H-ion concentration, fail to respond; respiration and circulation are suspended and acid death—anesthetic death—follows.

These studies explain why a patient, whose reserve alkalinity has been seriously reduced by exertion, emotion, physical injury or infection, or, by reason of starvation, interference with respiration or impairment of the liver or kidneys, is approaching acidosis, does not take an inhalation anesthetic well; why there is much nausea and slow recovery from anesthesia in some cases and death in others, and why, in particular, children who are near acidosis always pass into that state and die unexpectedly.

These facts show how necessary it is for the surgeon and the anesthetist alike to realize that during the operation each is draining the store of reserve alkalinity. If the surgeon employs a local anesthetic, uses gentle manipulation and produces the least possible trauma, he conserves his patient and demands from the anesthetist less of the damaging inhalation anesthetic. The anesthetist in turn conserves the patient by using the lightest possible even anesthesia administered with the least psychic trauma.

These studies show that for the bad risk patient, nitrous oxid anesthesia is to be preferred to ether, and that analgesia with local anesthesia should be employed, with general anesthesia only when it is demanded by certain phases of the operation.

These researches suggest the value of a mechanistic view of the phenomena of anesthesia and attach a high importance to the work of the anesthetist.

In my own clinic we have now administered nitrous oxid anesthesia in over 15,000 cases without a death; and moreover, as our knowledge and experience accumulate, we are able with increasing accuracy to adapt the anesthetic to the individual.

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CONSTITUTIONAL INFERIORITY*

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In presenting the conception of constitutional inferiority it is necessary to emphasize the fact that the human mind is complex and intricate in structure, as well as from the point of view of organic and social heredity and its adaptation to the environment. It is important to bear in mind that in early life mental adjustment is purely instinctive and emotional. Furthermore, the volitional and intellectual faculties with the moral sense make their appearance rather late in mental development. While it is true that the whole mental organism is of a sensitive nature, nevertheless it evinces considerable plasticity necessary for adaptation. It is also to be remembered that because of these sensitive and plastic qualities, this organism is capable of receiving environmental impressions of favorable or pernicious character.

Of great significance is the fact that there is an underlying organic basis for the harmonious union of psychic forces necessary for the execution of a coordinate mental act, that is a healthy equilibrium of emotion, volition and intellection, which are controlled by organic heredity, and only in part modified by social evolution. It is not difficult to conceive how a congenital defect¹ in the affective, or volitional, or intellectual sphere or in all spheres may produce psychic instability, and indeed to such an extent as to cause a maladjustment of varying degree and intensity. The fact that an isolated enfeeblement of the intellectual faculty only is not at all requisite to characterize constitutional inferiority per se is quite apparent. It is interesting to note that a lesion of one faculty may indirectly disturb the function of the entire mental organism.

In classifying constitutional inferiority, it is advisable to be guided by the individual fundamental disorder involved in each of the three faculties. Upon this basis we may divide mental inferiority into three large groups, intellectual, emotional, and volitional.

The intellectual type embraces a wide range of inferiority, which may differ in character and quality. Idiocy, imbecility, and moronism are examples of one extreme. Again, there are forms of relative intellec-

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1. Karpas: Psychic Inferiorty, New York Med. Jour., 1913, xcvi, 594.

tual deficiency which in a large number of instances are not of social evil, because volitional and emotional faculties are not so impaired as to bring about anti-social upsets.

The emotional form of mental inferiority presents well-defined characteristics. In some instances there is a deficiency or excess of emotional activity of such a nature as to produce distinct types of personalities. The *mental clams* are a well-known class. They are seclusive and secretive, rather timid and self-absorbed, indulge in dreams and the real world is of very little source of interest to them. Some of them are oversensitive, suspicious, and chronic masturbators. Such a type of personality was termed by Hoch as "shut-in" and is found in a large number of cases of dementia praecox. However, some of them never develop a psychosis or a neurosis, but they exhibit some difficulty to adjust themselves to their environment.

On the other hand, there is another type of personality which is of a highly vivacious nature, and of vacillating mood. Such persons are loquacious, rather keen, and manifest lack of capability to suppress or repress their feelings. This form of mental make-up is met in manic-depressive insanity, which was also described by Hoch.

In addition to these two striking types there is another one in which emotional instability is the fundamental disorder. To this class belong the nervous and hysterical temperament and a hypochondriacal and neurasthenoid disposition. To be sure, such individuals evince considerable instability and some of them develop definite neuroses or psychoses. Particularly it is true of the nervous temperament, which in addition to syphilis or alcohol develops psychoses peculiar to these etiologic factors.

Another important type of an abnormal personality which is determined by perverted feeling is known as the psychopath, or, in popular language, the crank. I prefer to call it a congenital psychoneurosis, because it has so many earmarks of an actual neurosis, though it is not amenable to radical treatment. Such persons present definite psychopathic characteristics which express themselves in oddity of conduct, vagaries in dress, asocial tendencies and fantastic ideas. As a class they are unstable and are not wage earners. They appear intellectual, but their education is only smattering and superficial. They are failures in life; the Utopian fancies in which they indulge never or rarely take a constructive or practical course. As a rule they do not commit gross crimes, except some sexual offenses, which they justify on the ground of the moral code peculiar to their kind. They make themselves conspicuous, but they are tolerated in society to some extent because they seldom come in collision with the law except in extreme instances in which their sociologic beliefs are at variance with the existing statutes.

Of all the other forms of constitutional inferiority none is as significant as the volitional type, because of its great social import. The underlying disorder is lack of development of will-power, feeling and moral sense. And to quote Maudsley:²

He has no capacity of true moral feeling; all his impulses and desires, to which he yields without check, are egoistic; his conduct appears to be governed by immoral motives, which are cherished and obeyed without any evident desire to resist. There is an amazing moral insensibility.

There are no apparent intellectual disturbances according to the usual gross tests. However, on more

searching analysis, one finds considerable superficiality, apperceptive faculty is weak, the enfeebled judgment is quite manifest when confronted with difficult situations or tasks and the stock of knowledge takes an egoistic trend. In the words of Maudsley.²

The intelligence is often acute enough, being not affected otherwise than in being tainted by the morbid feelings under the influence of which the persons think and act; indeed they often display an extraordinary ingenuity in explaining, excusing, or justifying their behavior, exaggerating this, ignoring that, and so coloring the whole as to make themselves appear the victims of misrepresentation and persecution. Their mental resources seem to be greater sometimes than when they were well, and they reason most acutely, apparently because all their intellectual faculties are applied to justification and gratification of their selfish desires. One cannot truly say, however, that the intellect is quite clear and sound in any of these cases, while in some it is manifestly weak.

In formation of habit and character, volition, emotion and the moral sense play a very important part, and this explains why in these individuals the habits are faulty and the character is altered. They are deceitful, given to lying, contrive numerous schemes to cheat and have no control of their primary impulses, such as the sexual and nutritional instinct. A marked autoerotic feeling is in the foreground, which may assume different phases and forms. The altruistic tendency is very superficial, or not developed at all. In the attempt to adjust themselves they follow the path of least resistance, and because devoid of moral sense and deficient in will-power and feeling, they commit all kinds of antisocial deeds, which are frequently determined by temptation, suggestion and environment. However, the last invariably shows a certain degree of inconsistency between the act and the actual stimulus.

Were we in possession of concrete tests to gage such an abnormal mental state, we should have little difficulty in demonstrating that the emotions and volition are of a distinctively primitive type; in other words, we are dealing with a psychic malformation in which only one part of the mental organism reached a degree of maturity.

The clinical varieties of the volitional form of constitutional inferiority are many and indeed in some instances they remain undetected till they come in conflict with the law. It is significant to note that the more atrocious the crime, the more difficult to convince the layman or even the physician that such a crime resulted from an abnormal mind.

It cannot be too strongly emphasized that antisocial tendencies which are recurrent in nature and which are not adequately modified by environmental influences are invariably determined by a psychopathic condition. In this connection the question of mental responsibility may be introduced. Do such persons have a full knowledge of the nature and quality of the crime they have committed? If an intact mentality is determined by one faculty only, intelligence, and the other two, emotion and will-power, are to be disregarded, then such a sophistical conception of mental responsibility may appear plausible. However, according to modern psychology an intact mentality must depend on the harmonious balance of the three faculties, emotion, volition and intelligence; then how can a moral defective be truly responsible for a crime, when in reality he is constitutionally incapable of differentiating between right and wrong? The sooner we get away from the old conception of mental responsibility, the sooner we will come to a better under-

2. Maudsley: Responsibility in Mental Diseases, p. 184.

standing of the underlying factors controlling such abnormal mental state. The persistent inability on the part of the individual to conform with the moral law is sufficient proof that the inherent defect lies not in the environment but in the mental constitution.

In a broad sense, the volitional form of constitutional inferiority should be regarded as a psychosis, because there is a marked element of maladjustment present. It is a malignant form of mental aberration and does not yield readily to rectification.

This is not a new disease, but it was recognized by the English physician Prichard³ as early as 1835, when psychiatric progress was at the low ebb, anatomic knowledge of the nervous system was deficient, and psychologic investigations were permeated by the atmosphere of crude philosophic dogmatism. Prichard termed this peculiar mental affection moral insanity. Later investigators, while differing in the nosologic conception, yet admit the occurrence of such an abnormal mental state. Some preferred to term it moral imbecility, moral idiocy, and constitutional inferiority. It is of little practical interest what such a pathologic mental condition may be designated, the fact remains that this malignant form of mental aberration is of relatively frequent occurrence and is a great social evil. A large majority of the criminal class, tramps, vagrants, prostitutes, chronic alcoholics and other degenerates, belong to this group.

The following case is of interest:

A. is 12 years of age, born in England, and comes apparently from a healthy family. He was brought to the mental hygiene clinic because for the past eighteen months he has been continually stealing.

There are no neuroses, psychoses or mental degeneracy in the family or its collateral branches.

The patient is the second of five children. Labor was instrumental because of the child's large head, which was relatively out of proportion to the rest of his body. There is no history of convulsions or fainting attacks, but he suffered from enuresis for many years. He sustained several injuries to the head in early childhood. At the age of 7 he had membranous croup and at 7½ years of age suffered with chorea. He had measles, but no meningitis.

He entered kindergarten at 3 and later attended school; he failed only once in promotion, but this was ascribed to poor deportment.

The mother thinks that following the attack of croup he began to show changes in his mental condition, when he became restless, fidgety and stubborn. However, he is said to be good natured, but at times appears revengeful. Otherwise he is bright intellectually. He plays with boys and has many friends. He reads books and spends his evenings at home.

For the past eighteen months he has been given to stealing from his family and strangers. He takes everything he can turn into money. He gets up at night and steals money from his parents or from a stranger who happens to stay in the house. In addition, he lies a great deal and has absolutely no control over himself, although he realizes that it is wrong to take things which do not belong to him. Once he was arrested, but because he showed good intellectual endowment the mother was advised not to commit him to a reformatory.

Mentally the patient makes a fairly good impression. He appears bright and according to the intellectual tests is not feeble-minded in the true sense of the word. When questioned about his acts he shows very little embarrassment. He admits that it is wrong to steal, but he could not help it, in his words: "I cannot resist the temptation, I want to get things." He knows that for stealing he will get a prison sentence. Despite the fact that he was reading very diligently of the recent trial and that he was told by his mother that he is just like the

accused, nevertheless he makes no attempt to control himself. He states that with the money he steals he buys candy and spends it in other frivolous manner.

From the physical point of view, except for a large head he shows no other abnormalities and there are no neurologic signs.

With this brief outline of the fundamental conceptions of constitutional inferiority, we may now briefly consider the question of the care and treatment of such patients. It is needless to state that the most important thing is to detect those forms of mental abnormalities in the early development stages, when simple adjustment may be undertaken. The normal mind is elastic and finds little difficulty to adapt itself to certain surroundings, whereas the abnormal requires an artificial environment in the process of adaptation. It is interesting to recall Huxley's⁴ conception of education. In his own words: "What is meant by education is learning the rules of this mighty game. In other words, education is the instruction of the mind (intellect⁵) in the laws of nature, under which name I include not merely things and their forces, but men and their ways." He compares the world to a chess-board, the pieces to the phenomena of the universe, and the rules of the game he calls the laws of nature. The successful player is the one who knows the chess-board well, and has a good knowledge of the laws of nature. It may not be far fetched to say that the integrity of mental health depends on the knowledge of the laws of nature and ability to utilize them correctly in the adjustment of one's environment, the chessboard. If the chessboard is too complicated for one to play his game, why encourage him to make these mistakes repeatedly to his own detriment and to the detriment of society? In such cases give him a simple chessboard to play an uncomplicated game which does not overtax his mentality.

Briefly stated, prophylaxis in the plastic stage is the important measure, and special pedagogic methods, religious and moral influence, environmental reconstruction and physical and manual training are necessary in the process of readjustment and reeducation in such cases.

For the fully developed cases of the first and second group the actual care and treatment present less of a problem than the last class, inasmuch as many of them can be cared for in institutions for the insane or the feeble-minded.

The volitional form of mental inferiority exerts directly and indirectly a pernicious influence on society. The fully developed cases with definite antisocial tendencies are incarcerated in protectories, prisons, reformatories, etc., but this in itself does not solve the problem in so far as such treatment is only symptomatic and not radical. Persistent and recurrent attacks of antisocial upsets should not be ascribed to sociologic conditions, but deeper strata for such abnormal reaction should be sought in one's mentality. It is manifestly important to analyze crime from three angles: First, we should obtain a complete knowledge of the psychologic background from which such a crime emanated, and ascertain the individual from the point of view of heredity and constitutional make-up. Second, we should determine the character and nature of the committed act and the frequency of its recurrence. Third, we should ascertain whether such a crime was

4. Huxley: *Liberal Education*, p. 83.

5. Intellect is used by Huxley; mind is substituted by the writer because it expresses the entire structure and function of the mental organism. In education the emotional and volitional spheres are just as important as the intellect.

3. Prichard: *Treatise on Insanity*, London, 1835, p. 12.

determined by environmental motives. In many instances the antisocial deed gives the first clue of the person's defective mentality and indeed this is very important to establish in order to save society from such detrimental influences. Just the same as the homicidal paranoiac is a dangerous member of the community, so is the moral defective, and should be treated in a similar manner. They are both malevolent, and society should be protected against them. A deeper appreciation of this abnormal type of mentality will necessarily create ways and means of establishing institutions for such individuals and at the same time change our old conceptions of mental responsibility, and control further progress of vice, crime, and other forms of degeneracy.

ABSTRACT OF DISCUSSION

DR. F. P. NORBURY, Springfield, Ill.: I would like to add a few remarks from the medicolegal point of view, when we are confronted with this type of constitutional inferiors in the so-called malingerers. As Dr. Karpas has said, these are the individuals who, when confronted with a difficult situation, seek the easiest way out and that within their own limitation. Malingering simply is a way out oftentimes. This not only occurs in civil cases, but I have been concerned with three cases of murder wherein malingering was attempted to be carried out as a possible defense for connection with the crime, the insanity, however, being assumed after commission of the crime. We proved the understanding of responsibility on the part of the defendant as outlined by criminal law. When that legal test was applied these individuals were convicted as murderers and a life sentence was imposed in two cases. The third case is still pending, and the fourth case is one that reached our supreme court on some technical errors in the trial. The man was sentenced for life but on account of the errors the case came to the Supreme Court of Illinois for review and retrial based on a technicality involving this very point of malingering. However, I do not know whether the case will ever come to trial, because when brought back the defendant made his escape and so far has not been apprehended. But he is constitutionally inferior in the emotional, the volitional, and the intellectual aspects of life. In one case that I had under observation, a man being tried for forgery in the United States Court assumed insanity as his defense. He truly was a malingerer. We all know that the malingerer as we see him, no matter whether involved in a criminal procedure or some milder offense, or even when attempting to deceive in some other way, is of an inferior type. This to him is the way out of a difficult situation and offers also an opportunity for him to make his impress on others to help him out of some situation, as for instance, begging alms or through interest in others affairs.

DR. M. J. KARPAS, New York: Most cases of constitutional inferiority of the volitional type do not mangle, as a rule. When they are under restraint they are perfectly willing to tell their whole life history and, indeed, this is rather characteristic in this group of cases. I must confess that I have not yet encountered a malingerer in this class of cases in the true sense of the word.

Salt in the Diet.—Mungo Park, the traveler, describes his own feelings on long-continued salt want as follows: "I found the scarcity of salt actually painful. The continued subsistence on nothing but vegetable food produced finally a desire for salt so painful that it can hardly be described." We are not familiar with any prolonged experiments with salt-free diets on man. But persons on ordinary diets who have gone for a long time without sodium chlorid complain in general of lack of appetite (owing to the unpalatability of the food), and of some vague or general bodily distress—a condition similar to that induced by monotonous and incomplete diets.—A. J. Carlson, *Control of Hunger in Health and Disease*.

A NEW TREATMENT FOR PARALYSIS AGITANS*

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An Italian author¹ states that in paralysis agitans "no treatment is of any avail," and "there is no authentic case of recovery." A severely distressing malady, of acknowledged incurable nature, and until now of absolutely untreatable form, deserves a few minutes' consideration when even only slight and temporary relief from suffering has been brought to the patient.

The clinical details of the case that determine the diagnosis run as follows:

History.—(M. R.—P. H. No. 3040).—Woman, aged 52, married, German, housewife, first came to the Psychopathic Hospital, June 29, 1915, complaining that the hands trembled, the feet dragged, and the body felt constantly heavy. The trouble began in 1909, when her left arm commenced to tremble. This continued from July to October, and then disappeared. February 2 it began again, and had gradually increased since. The left arm had also grown gradually weaker and stiffer, and its use now amounted to very little. The right arm began to tremble about the same time as the left, but she could use it more. For a year the lower extremities had also showed tremor, and the left one was stiff. Use of the right arm gave an intense shoulder pain. There was much pain in the muscles of the left arm. The tremor ceased with effort, was absent at night, and was worse in excitement. Work was much interrupted by the slowness of the patient's movements, and general stiffness. She was restless and trembled in bed for half an hour before she was able to get to sleep. This all amounted to severe, constant suffering.

The patient had had measles. Menstruation began at 19; hysterectomy had been performed for suspected tumor at 42. This was followed by "pleurisy" and "nervous prostration" Three years after the operation a sponge was removed from the upper abdomen.

The patient's mother died of cholera in 1866 and her father at 62 of pleurisy. Four children were well.

Examination.—This in general was negative. Below the left breast was the scar of the sponge removal, below the umbilicus the scar of the laparotomy. There was clonic rotation of hands. There were varicose veins on the legs. The tongue extended with tremor. The arm reflexes and patellar jerks were active. The gait was bear-like. The left leg was somewhat spastic; this was more noticeable when walking fast. Oscillations were about four to the second. There was very marked tremor in speech.

A diagnosis of paralysis agitans was made.

Treatment and Results.—The patient was assigned some treatment for the marked tremor in her speech. I was inspired to try *something*, because of the marked improvement obtained in a previous speech case of so-called "essential tremor," in which the patient had been treated for two years without improvement at another hospital. I gave some vowels to be sounded in a prolonged steady fashion, with no intention of attacking the general condition.

To make a long story short, the patient soon returned to relate that the tremor in the hands was a little better; and she felt better. I took the hint, and applied slow motions to the arms and legs to be executed for fifteen minutes, three times a day. The tremor, stiffness and distress gradually grew less. In about two weeks she had an hour of complete relief from all her symptoms—tremor, stiffness, tiredness, pain in arms and heaviness. She could soon go to sleep at once on retiring without tossing about as before for half an

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1. Rizzuto: Policlinico, Rome, Nov. 21, 1915; abstr., THE JOURNAL A. M. A., Jan. 22, 1916, p. 316.